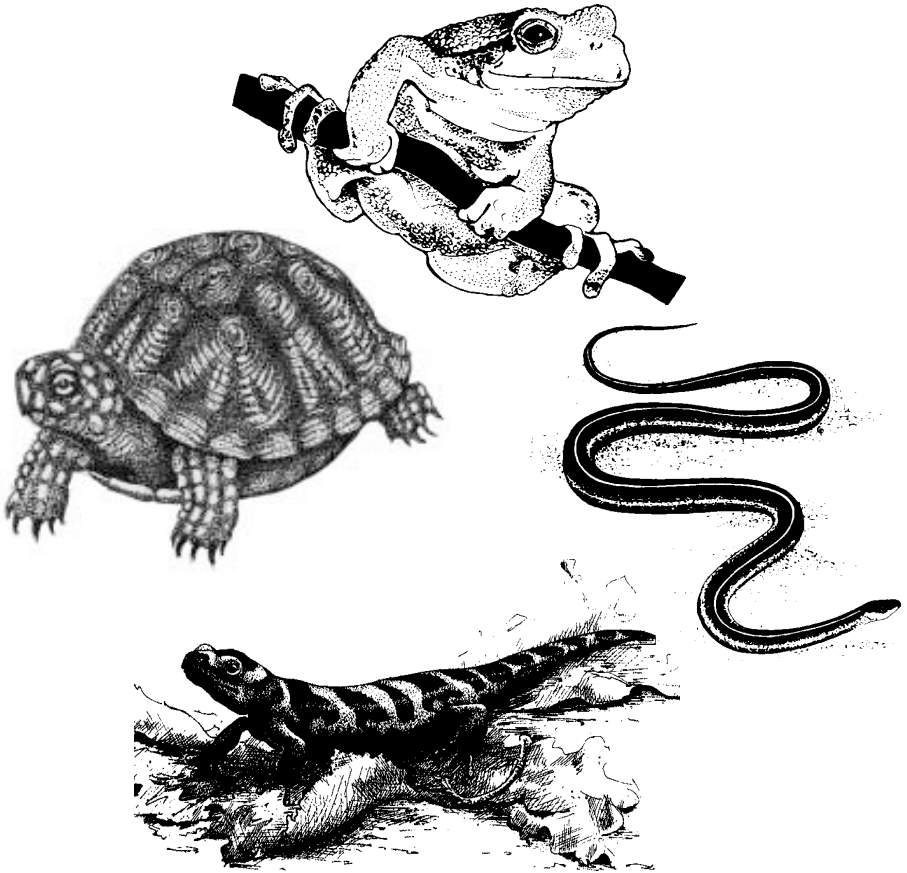
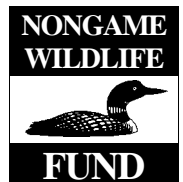


# Michigan Herp Atlas Project



Michigan Department of Natural Resources  
Natural Heritage Program, Wildlife

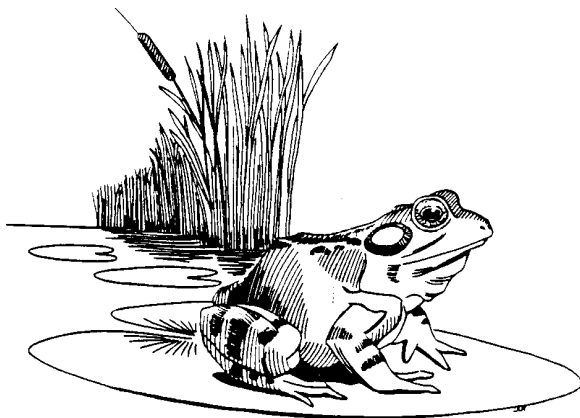


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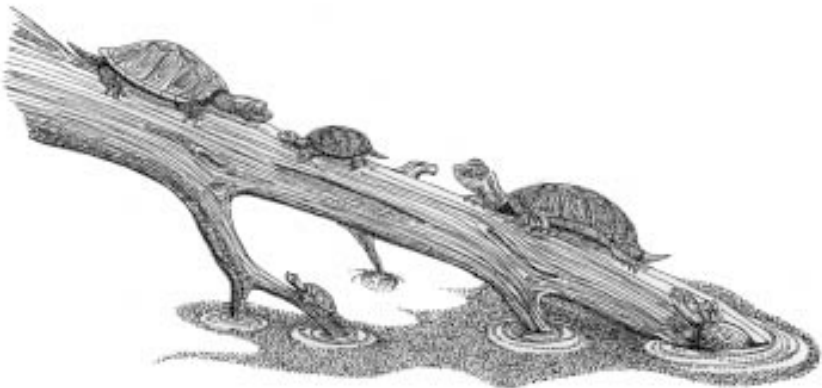




# Michigan Amphibian & Reptile Atlas Project

Amphibian declines have been documented worldwide for the past few decades. Research continues in order to find causes for the declines. Some factors have been linked to local population declines, but there is no one overall cause. In Michigan, the history of amphibian and reptile populations is sketchy. There have been local surveys done in several areas, only a few have been long-term. Other than the recent Michigan Frog and Toad Survey initiated by the Department of Natural Resources (MDNR), Natural Heritage Program in 1996, no statewide surveys or monitoring of amphibian or reptile populations has been done.

Habitat loss and degradation, acid rain, collection for pets, and a high incidence of roadkills are likely factors determining the abundance of amphibians and reptiles in Michigan. Snakes are also vulnerable to persecution due to the misperceptions of most people and stigma placed upon them. In addition, amphibian and reptile populations can be reduced in number from illegal collecting. Michigan currently protects four reptile species and two amphibian species from harm under part 365, Endangered Species Protection, of P.A. 451 of 1994, Michigan Natural Resources and Environmental Protection Act. Seven other amphibians and reptiles are listed as species of “special concern” and are protected under a MDNR Director’s Order (DFI 166.93 of 1993) regulating the take of these species.



The Michigan Frog and Toad Survey has been very popular with Michigan citizens and has been successful in beginning to gather information on our frogs and toads, but a reliable set of baseline data is necessary to understand and document changes in all of the state's amphibian and reptile species' populations over an extended period of time. The purpose of the Atlas Project is to collect observation data about Michigan's native amphibians and reptiles (herpetofauna or "herps") so that we can document their distribution, and with continued effort, document changes or trends in their populations.

This data-gathering effort will largely depend on volunteers. The first year will be a pilot year, so that the organizers will be able to evaluate data gathering techniques, data verification procedures, data recording, size of volunteer force, and other organizational details.

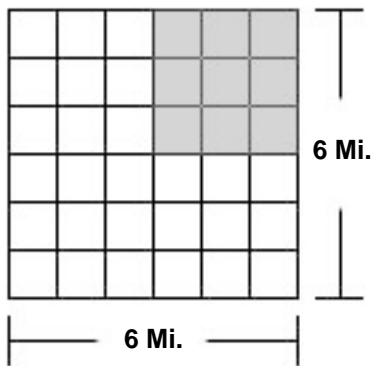
Knowledgeable herpetologists or biologists around the state will verify all data submitted for the Atlas Project. Training sessions will be held at the request of clubs or organizations that may be interested in getting their members involved in the project. Data cards will be supplied to interested volunteers upon request.

The Michigan Amphibian and Reptile Herp Atlas Project will only be successful if enthusiastic volunteers are willing to help. We expect volunteers to range in age and in occupation, but all will have an appreciation for the outdoors and Michigan's natural heritage. We are grateful for your participation and dedication.

## **Getting Started**

The Herp Atlas project is designed to run for 5 years. Any observation of a herp species can be submitted on a data card and submitted. Whether it be systematic searches for specific species or opportunistic sightings, it is important information to document and get the Atlas Project started. In subsequent years, in addition to opportunistic data, we will focus on areas of the state or particular species for which we have little information. Data will be placed into the atlas blocks as described in the Atlas of Breeding Birds in Michigan, Phase II (being

initiated in 2001). These blocks are defined as one quarter township survey units, or nine square miles (see figure). Survey blocks may be assigned to individual volunteers. There are 1,896 townships and 7,080 atlas blocks in Michigan. In the future, efforts to atlas rare and difficult-to-census species will focus on areas with historical occurrences and areas with potential habitat for those species.



Local organized groups are encouraged to have herp forays. These can consist of all-day or partial-day field trips to specific areas to search for herps.

## Documentation and Verification

Verification of observations is necessary to ensure the accuracy and credibility of the Michigan Herp Atlas. **Data verification is required for your first observation of a species in any given block.** Proper verification of observations includes photos, audio recordings of frog calls, video recordings, or road-killed specimens. **Collection and sacrifice of live individuals will not be tolerated.** Temporary possession of herps for photography or identifying purposes is allowed. Extreme care should be taken when handling these animals to avoid harm to them and to yourself. If not using gloves, hands should be free of any type of lotion or chemicals. **Michigan is the home to one venomous snake, the Eastern massasauga rattlesnake, so be sure of your identifying skills before handling any snake.** Animals should also be returned to the precise location from which they were taken.

The accompanying data card should include as much information as possible about the observation. An attempt should be made to identify

the species, but the data card and the verification should still be submitted if identification is not possible. There are two options for submitting observation data. You may send your evidence and data card directly to the Atlas coordinator or to the Kalamazoo Nature Center for verification, or you may have observations verified by an approved data validator. Validators will accept data and evidence of species identification, initial your data card and send it to the Atlas coordinators. **Evidence does not need to be mailed.** You may send your information to a validator in the mail or deliver it personally. Should you decide to deliver it personally, please contact the validator by telephone or e-mail to set up an appointment. See “Data Validators” at the end of this booklet for a list of validators you may consult to have observations verified prior to submission to the Atlas Coordinators.



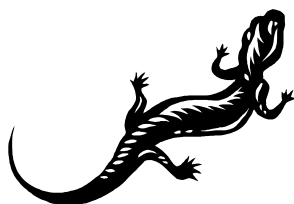
# Atlasing Procedures

## Locating Amphibians & Reptiles

Amphibians and reptiles are extremely variable in appearance as well as behavioral patterns and in their habitat preferences. In general, herps tend to be secretive in nature except during specific times of the year (e.g., mating season) and under specific environmental conditions (usually high humidity and/or rainfall). Finding and observing herps is much like “birding” – you must learn the habits of the creatures you seek and be in the right place at the right time. Herps can be divided into major groups for the purpose of discussing locating techniques. Exceptions for individual species will be noted.

Timing is crucial when searching for herps. Generally, from April to October is the active time of year for these species in Michigan.

**Salamanders:** The majority of salamanders spend most of their lives underground, or hidden beneath forest debris or in aquatic vegetation. Salamanders can most reliably be found by looking under cover objects such as rocks, logs, bark, and vegetation. This is especially true of terrestrial and semi-terrestrial species. You should always replace cover objects to their original position after looking under them.



Aquatic forms such as newts can often be observed swimming or floating in the water column of ponds or along the weedy shallow margins of lakes. This is also true of spotted salamanders during the breeding season; however, they are seldom found except in fishless ponds in and near woods. Other aquatic salamanders such as hellbenders and mudpuppies can occasionally be located by lifting submerged cover objects in streams and other appropriate bodies of water.

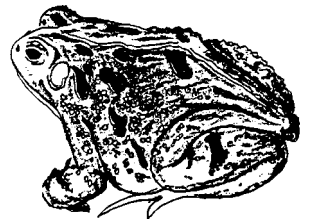
Salamanders, by and large, when active on the surface, are nocturnal

so that slowly walking about at night in appropriate habitat with flashlight or lantern will often prove to be very successful. Any area that is likely to yield salamanders during daytime collecting (e.g., spring seeps, stream margins, wooded ravines, etc.) will also be good areas to locate salamanders at night. While it is unwise to go out alone at night, large groups of people in the habitat will inevitably cause damage to fragile habitats. A deep footprint in the mud at the edge of a pond can be a significant obstacle to a migrating salamander. Rainfall and high humidity tend to stimulate salamander activity, so that nighttime collecting for terrestrial and semi-aquatic species is most productive under these environmental conditions.

Many of the “mole” salamanders (genus *Ambystoma*) are most reliably found by investigating potential breeding ponds or streams. Breeding activity is greatest at night, often during rainfall. Respect the habitat and its inhabitants – get only as close as is necessary for observation and identification, and avoid disturbing breeding salamanders and their egg masses.

The best times of the year to find salamanders is either in the spring or in the fall. Weather conditions are going to determine success, though, more than date.

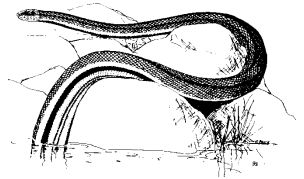
**Frogs and Toads:** Frogs and toads (commonly referred to as just “frogs” or “anurans”) are highly vocal during the breeding season (spring) which makes them easy to locate and identify. Driving about and listening for choruses at night is the most effective method of collecting information about the species that inhabit an area. Like birds, breeding anurans vocally announce their presence with characteristic calls. Learning to identify frog vocalizations is not difficult, and recorded calls are commercially available to help the beginner. A frog call tape developed by the DNR Natural Heritage Program is also available at no charge to volunteer atlasers.



Frog breeding activity tends to be greatest on warm, damp evenings. After the breeding season, some anurans stay close to breeding areas, while others disperse to new habitats. Green frogs, mink frogs, and bullfrogs tend to remain in or near ponds and lakes, while Northern leopard frogs often move into surrounding fields and uplands. Toads, wood frogs, gray treefrogs, and spring peepers prefer moist woodlands but sometimes wander into fields and yards.

Amphibians should be handled only when necessary for positive identification, and captured specimens should be released as quickly as possible where they were found. Smaller individuals and species are quite delicate and sensitive to the heating and drying effects of human hands. Never handle an amphibian if your hands have insect repellent, sunscreen, or other chemical substances on them, as these can be harmful or fatal to the animal. The skin secretions of Great Lakes amphibians are not generally harmful to humans who handle them, but it is wise to avoid getting secretions in your mouth or eyes, and to wash your hands after handling any animal.

**Snakes and lizards:** Reptiles, in general, are more tolerant of handling than amphibians, but it is always a good idea to observe them from a distance to avoid disrupting their normal behavior. Specimens that are captured should be released where they were found. **Only well-trained people should ever approach or handle venomous snakes or any snake that you cannot positively identify.**

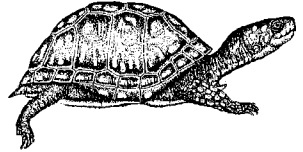


Small to medium sized species of terrestrial snakes are most likely to be found by looking under cover objects. Water snakes and queen snakes are best found by walking in and along streams and bodies of water as well as turning cover objects such as rocks and logs along the margins of streams and ponds. You should always replace cover objects to their original position after looking under them. Large species, such as black rat snakes, are usually found actively moving about in the open. In general, the best places to look for snakes are along margins of streams and lakes, around human habitation, in

open rocky areas and rocky slopes, and in regions where debris such as boards and other building material have been left lying around. In early spring, open rocky areas with southern exposures may be especially productive.

Snakes and lizards are most active from mid-April to mid-June and again in late August and early September.

**Turtles:** Turtles are probably the most difficult group of reptiles for the casual observer to encounter. Wood turtles and box turtles, however, are more likely to be seen in the open. Most species of turtles are primarily aquatic,



but many bask either at the surface of the water or on emergent objects such as rocks, logs, and sandbars (e.g., snapping turtles, painted turtles, map turtles, softshell turtles). This basking behavior provides opportunities for the casual observer to see these elusive species. A careful approach and a good pair of binoculars will allow ample opportunities to see important field marks on these wary species. During the late spring and early summer, egg laying prompts individuals to move around on land in search of nesting sites. This is especially true along the edges of roads in the vicinity of streams and bridges. Heavy summer rains may initiate terrestrial activity in otherwise aquatic species.

Terrestrial turtles are most active from mid-April to the end of June. Aquatic species tend to sun throughout the summer and engage in terrestrial reproductive activity during June.

## Maximizing Observation Effectiveness

Information for the Michigan Herp Atlas will be gathered from a variety of observation types and a range of observer expertise. The sampling block will be on the township scale. Your effectiveness in atlas-ing an area can be greatly increased by knowing the area. In the winter, before atlas work begins, carefully go over your area to locate all possible habitat types. Habitats to especially look for are springs and

seeps, ponds, small streams along wooded valleys, edges of woods and fields, and bogs and wetlands. In early spring actual scouting trips into your area will help you identify specific areas to which you will want to return when the field season begins. On these scouting trips, things you should be looking for are possible vernal ponds, exposed rocky sections along roadsides, roadside ponds and wetlands, small streams with abundant rocks and other cover along the banks, and ravines with spring seeps on them.

In areas that are highly developed and/or have a high degree of human activity, the atlaser should look for small sections of “green space” such as vacant lots and hillsides or ravines too steep on which to build, land associated with rights-of-way (power lines, roadways, railroads), under-developed land in industrial complexes, the margins of shopping malls and the margins of streams or bodies of water. Parks and other recreational areas should also be carefully examined. Areas like this can often harbor a surprising number of amphibian species and some reptiles as well.

## Ethics of Atlasing

It must always be kept in mind that amphibians and reptiles are living organisms and should be treated with care and respect. Unlike birds, herps can be, and usually are, actually captured for positive identification. Be sure that you handle the animals gently and return them to their place of capture. Do not expose them to chemicals that may be on your hands, clothing, or on a surface on which you may place them. This can be harmful, if not fatal, to many species. It is best to retain herps in captivity for as short a time period as possible. Unless there is a problem with identification animals should not be removed from their place of capture.

If the herp was found under a rock or other cover object, it should be replaced next to it, rather than directly under the object, since it is possible to inadvertently crush an animal while replacing a cover object over it.

The majority of herps (especially snakes and salamanders) will only be found by actually moving cover objects in the animal's environment. This activity, while necessary, should be done with concern for the environment so that the animal's habitat is not altered. Be sure that you return all cover objects to their original position. In all cases treat the environment with the utmost respect.

Be sure to ask permission before entering private land. Participation in this project does **not** give you authority to trespass on private land or to collect amphibians and reptiles on public or private land. Be sure that you don't leave anything behind when you leave, whether you are on private or public

land. Habitat degradation and illegal collecting have both played a significant role in the decline of many species of herps.



# Checklist of Michigan Amphibians & Reptiles



## Amphibians - Frogs

Green Frog	<i>Rana clamitans</i>
Bullfrog	<i>Rana catesbeiana</i>
Northern Leopard Frog	<i>Rana pipiens</i>
Pickerel Frog	<i>Rana palustris</i>
Mink Frog	<i>Rana septentrionalis</i>
Wood Frog	<i>Rana sylvatica</i>
Blanchard's Cricket Frog	<i>Acris crepitans blanchardi</i> <b>(special concern)</b>
Western Chorus Frog	<i>Pseudacris triseriata triseriata</i>
Boreal Chorus Frog	<i>Pseudacris triseriata maculata</i> <b>(special concern)</b>
Northern Spring Peeper	<i>Pseudacris crucifer</i>
Eastern Gray Treefrog	<i>Hyla versicolor</i>
Cope's Gray Treefrog	<i>Hyla chrysoscelis</i>
Eastern American Toad	<i>Bufo americanus</i>
Fowler's Toad	<i>Bufo woodhousii fowleri</i>

## Amphibians - Salamanders

Mudpuppy	<i>Necturus maculosus maculosus</i>
Western Lesser Siren	<i>Siren intermedia nettingi</i>
Blue-Spotted Salamander	<i>Ambystoma laterale</i>
Spotted Salamander	<i>Ambystoma maculatum</i>
Marbled Salamander	<i>Ambystoma opacum</i> <b>(state threatened)</b>
Small-Mouthed Salamander	<i>Ambystoma texanum</i> <b>(state endangered)</b>
Eastern Tiger Salamander	<i>Ambystoma tigrinum tigrinum</i>
Red-Spotted Newt	<i>Notophthalmus viridescens viridescens</i>
Central Newt	<i>Notophthalmus viridescens louisianensis</i>
Red-Backed Salamander	<i>Plethodon cinereus</i>
Four-Toed Salamander	<i>Hemidactylum scutatum</i>
Eastern Hognose Snake	<i>Heterodon platyrhinos</i>

## Reptiles – Snakes

Kirtland's Snake	<i>Clonophis kirtlandi</i> <b>(state endangered)</b>
Northern Copperbelly Snake	<i>Nerodia erythrogaster neglecta</i> <b>(state endangered, federally threatened)</b>
Northern Water Snake	<i>Nerodia sipedon sipedon</i>
Queen Snake	<i>Regina septemvittata</i>
Brown Snake	<i>Storeria dekayi</i>
Northern Red-bellied Snake	<i>Storeria occipitomaculata occipitomaculata</i>
Eastern Garter Snake	<i>Thamnophis sirtalis sirtalis</i>
Butler's Garter Snake	<i>Thamnophis butleri</i>
Northern Ribbon Snake	<i>Thamnophis sauritus</i>
Northern Ringneck Snake	<i>Diadophis punctatus</i>
Blue Racer	<i>Coluber constrictor foxii</i>
Black Rat Snake	<i>Elaphe obsoleta obsoleta</i> <b>(special concern)</b>
Eastern Fox Snake	<i>Elaphe gloydi</i> <b>(state threatened)</b>
Western Fox Snake	<i>Elaphe vulpina</i>
Eastern Milk Snake	<i>Lampropeltis triangulum</i>
Eastern Smooth Green Snake	<i>Liochloraphis vernalis</i>
Eastern Massasuga Rattlesnake	<i>Sistrurus catenatus catenatus</i> <b>(special concern)</b>

## Reptiles - Turtles

Snapping Turtle	<i>Chelydra serpentina</i>
Common Musk Turtle	<i>Sternotherus odoratus</i>
Spotted Turtle	<i>Clemmys guttata</i> <b>(state threatened)</b>
Wood Turtle	<i>Clemmys insculpta</i> <b>(special concern)</b>
Eastern Box Turtle	<i>Terrapena carolina carolina</i> <b>(special concern)</b>
Blanding's Turtle	<i>Emydoidea blandingii</i> <b>(special concern)</b>
Common Map Turtle	<i>Graptemys geographica</i>
Painted Turtle	<i>Chrysemys picta</i>
Red-eared Slider	<i>Trachemys scripta elegans</i>
Spiny Softshell	<i>Apalone spinifera</i>

## Reptiles – Lizards

Five-lined Skink	<i>Eumeces fasciatus</i>
Six-lined Racerunner	<i>Cnemidophorus sexlineatus</i>



## Filling Out the Data Card



You should take some time to study the data card. This is by far the most important part of the atlas project. All the time and effort in the world will be of no avail to the project if the data gathered are not permanently recorded in an accurate, complete, and timely fashion.

You must restrict your observations to one species per card, even if two species are seen side by side. However, it is not necessary to submit data on the same species at the same location if seen there more than once. The information requested on the card will facilitate the recording of data that provides information on the location of the observation as well as some biological information on the individual.

**Number observed:** Write down the number of individuals of the same species observed at that site.

**Size/Sex:** Record the size (approximate if specimen is not handled) of the individual (or average size if more than one). Herps are generally measured from the tip of their snout to their vent (rear end) – do not include length of legs or tail. Please indicate if the individual(s) are in larval form.

**Weather:** Keep weather descriptors restricted to temperature, degree of precipitation (if any), and significant wind speeds.

**Location information:** Please include as much location information as possible. Include the atlas block number if known.

**Circumstances leading to observation:** Indicate if you were actively looking for this species or if you observed it casually and, if actively searching, what type of method you used.

**Habitat:** Limit your descriptions to general habitat type (e.g., pond, edge of lake, roadside).

**Evidence of threats:** Indicate if you observed any type of potential or direct threats to the individual or population at this site (i.e., wetland fill, heavy traffic).

**Evidence of reproduction:** Did you observe the individual laying eggs or giving birth? Did you observe individuals mating?

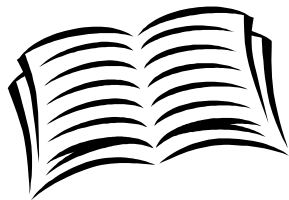
**Behavioral notes:** What was the individual doing when you observed it?

**Validation:** All data cards must be accompanied by evidence to verify the information unless the observation has been verified and the data card already initialed. This can include a photo, an audio tape, a video or a road-killed specimen. Specimens that were already dead when found can be submitted in a sealed clear plastic bag. **Live specimens will not be accepted as verification.** Those that consider themselves experts (i.e., trained herpetologists) that have provided the atlas organizers with their background need not submit verification. Further verification of a particular species by a particular atlaser need not be verified after the first verified observation of that species.

**Observer's name, address, phone, e-mail:** Please provide your name and contact information in case we have questions about an observation and so that we can keep track of your verified observations. Please send data cards and validation evidence to:

Herp Atlas  
Kalamazoo Nature Center  
P.O. Box 127  
7000 North Westnedge Avenue  
Kalamazoo, MI 49004  
or  
Lori G. Sargent, Herp Atlas Coordinator  
Natural Heritage Program  
PO Box 30180  
Lansing, MI 48909  
(517) 373-9418  
SargenL2@michigan.gov

## **Suggested References on Amphibians and Reptiles**



Amphibians and Reptiles of the Great Lakes Region; James H. Harding. Available in book stores or through The University of Michigan Press.

Frogs of the Lower Great Lakes Region. Audiotape. © 1995 Nature Discovery, 5900 Williamston Rd, Williamston, MI 48895.

Michigan Turtles and Lizards; James H. Harding & J. Alan Holman. Available in book stores or through The Michigan State University Press.

Michigan Frogs, Toads, and Salamanders; James H. Harding & J. Alan Holman. Available in book stores or through The Michigan State University Press.

Michigan Snakes; J. Alan Holman & James H. Harding. Available in book stores or through The Michigan State University Press.

Reptiles and Amphibians – Eastern/Central North America –  
Peterson Field Guides

Tracking the Vanishing Frogs; Kathryn Phillips; Penguin Books. Available in some book stores. Excellent discussion on reasons for amphibian declines all over the world

## Data Validators



The following is a list of validators you may consult to have observations verified prior to submission to the Atlas Coordinators.

Jim Fowler, Jr.  
20735 Carlisle  
Dearborn, MI 48124-3813  
Home Phone: 313-565-4446  
Work Phone: 313-982-6134  
JimF@hfmvgv.org

Dr. James Gillingham  
Dept of Biology  
Central Michigan University  
Mt. Pleasant, MI 48859  
(517) 774-3173 (office)  
(616) 448-2325 (Beaver Island Bio Station, summers)  
james.c.gillingham@cmich.edu

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Michigan State University Extension  
Michigan Natural Features Inventory  
P.O. Box 30444  
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(734) 426-3323  
RAWolinski@aol.com

For more information about the Natural Heritage Program, visit  
the Michigan Department of Natural Resources on the web at  
[www.michigan.gov/dnr](http://www.michigan.gov/dnr).